

We Claim:

1. A cutting tool insert comprising a substrate and a coating wherein the coating comprises one or more layers of refractory compounds of which at least one
5 layer comprises a precipitation hardened $(\text{Ti}_y\text{Al}_x\text{Me}_{1-x-y})\text{N}$ based layer, where Me is one of the element Zr, Hf, V, Nb, Ta, Cr, Mo, W or Si, and wherein:
- x is between 0.50 and 0.80;
a ratio, $R=x/(x+y)$, is between 0.50 and 0.85;
a sum of Ti and Al subscripts, $S=x+y$, is between 0.7 and 1.0;
10 a ratio of the peak width, $F_{10/90}$, $\text{FW}_{10\%M}$ or $\text{FW}_{90\%M}$ meaning Full Width at 10% and 90% of the maximum peak value reduced with the background, measured using X-ray diffraction with Cu $K\alpha$ radiation of the 200 peak at approximately $43^\circ 2\theta$ of the $(\text{Ti}_y\text{Al}_x\text{Me}_{1-x-y})\text{N}$ coating is higher than 7.5;
a ratio between the area of the h-AlN (100) peak at approximately $33^\circ 2\theta$
15 $(=A(\text{h-AlN})_{100})$ and the c- $(\text{Ti}_y\text{Al}_x\text{Me}_{1-x-y})\text{N}$ (200) peak at approximately $43^\circ 2\theta$ $(=A(\text{c}-(\text{Ti},\text{Al},\text{Me})\text{N})_{200})$ called K, wherein $K=A(\text{h-AlN})_{100}/A(\text{c}-(\text{Ti},\text{Al},\text{Me})\text{N})_{200}$, and K is between 0 and 0.3; and
the layer has a single $(\text{Ti}_y\text{Al}_x\text{Me}_{1-x-y})\text{N}$ (200) peak.
- 20 2. The cutting tool insert according to claim 1 wherein:
x is between 0.55 and 0.70;
the ratio, $R=x/(x+y)$, is between 0.55 and 0.75;
the sum of Ti and Al subscripts, $S=x+y$, is between 0.8 and 1.0; and
the $F_{10/90}$ value is higher than 8.
- 25 3. The cutting tool according to claim 2, wherein:
x is between 0.60 and 0.70;
the ratio, $R=x/(x+y)$, is between 0.60 and 0.75;
the $F_{10/90}$ is higher than 9; and
30 K is between 0 and 0.2.

4. The cutting tool according to claim 1, wherein $x+y=1$.
5. The cutting tool according to claim 1, wherein $x+y<1$.
- 5 6. The cutting tool according to claim 5, wherein Me= V, Zr, Ta, Nb, Si, or Cr.
7. The cutting tool according to claim 6, wherein Me= Zr, or Nb.
- 10 8. The cutting tool according to claim 1, wherein the layer is deposited by PVD and the precipitates are obtained by a spinodal decomposition of the cubic $(\text{Ti}_y\text{Al}_x\text{Me}_{1-x-y})\text{N}$ layer.
- 15 9. The cutting tool according to claim 1, wherein the precipitates comprise nano-meter sized cubic TiN (c-TiN) and cubic AlN (c-AlN) and/or hexagonal AlN (h-AlN).